its decomposing effect in the same degree as if acid instead of alkali had been used (603).

668. The proof, therefore, appears to me complete, that the combination of the acid with the oxide, in the former experiment, had nothing to do with the production of the electric current; for the same current is here produced when the action of the acid is absent, and the reverse action of an alkali is present. I think it cannot be supposed for a moment that the alkali acted chemically as an acid to the oxide formed; on the contrary, our general chemical knowledge leads to the conclusion that the ordinary metallic oxides act rather as acids to the alkalies; yet that kind of action would tend to give a reverse current in the present case, if any were due to the union of the oxide of the exciting metal with the body which combines with it. But instead of any variation of this sort, the direction of the electricity was constant, and its quantity also directly proportional to the water decomposed, or the zinc oxidised.

There are reasons for believing that acids and alkalies, when in contact with metals upon which they cannot act directly, still have a power of influencing their attractions for oxygen (676); but all the effects in these experiments prove, I think, that it is the oxidation of the metal necessarily dependent upon, and associated as it is with, the electrolysation of the water (656, 658) that produces the current; and that the acid or alkali merely act as solvents, and by removing the oxidised zinc, allow other portions to decompose fresh water, and so continue the evolution or determination of the current.

669. The experiments were then varied by using solution of ammonia instead of solution of potassa; and as it, when pure, is like water, a bad conductor (290), it was occasionally improved in that power by adding sulphate of ammonia to it. But in all the cases the results were the same as before; decompositions of the same kind were effected, and the electric current producing these was in the same direction as in the experiments just described.

670. In order to put the equal and similar action of acid and

alkali to stronger proof, arrangements were made as in fig. 40; the glass vessel A contained dilute sulphuric acid, the corresponding glass vessel B solution of potassa, P P was a plate of platina dipping into both solutions, and Z Z two plates of amalgamated zinc connected with a delicate galvanometer. When these were plunged at the same time into the two vessels, there was generally a first feeble effect, and that in favour of